

## SYSTEMS AND METHODS FOR INTRAOPERATIVE TARGETTING

INVENTOR: RAMIN SHAHIDI

This Application claims priority from Provisional Application Serial No.

5 60/513,157 filed on October 21, 2003 and entitled "SYSTEMS AND METHODS FOR SURGICAL NAVIGATION", the content of which is incorporated by referenced herewith.

### BACKGROUND

10 In recent years, the medical community has been increasingly focused on minimizing the invasiveness of surgical procedures. Advances in imaging technology and instrumentation have enabled procedures using minimally-invasive surgery with very small incisions. Growth in this category is being driven by a reduction in morbidity relative to traditional open procedures, because the smaller incisions minimize damage to  
15 healthy tissue, reduce patient pain, and speed patient recovery. The introduction of miniature CCD cameras and their associated micro-electronics has broadened the application of endoscopy from an occasional biopsy to full minimally-invasive surgical ablation and aspiration.

Minimally-invasive endoscopic surgery offers advantages of a reduced likelihood  
20 of intraoperative and post-operative complications, less pain, and faster patient recovery. However, the small field of view, the lack of orientation cues, and the presence of blood and obscuring tissues combine to make video endoscopic procedures in general disorienting and challenging to perform. Modern volumetric surgical navigation